

- 1 -

SEQUENCE LISTING

<110> The Scripps Research Institute

Cheresh, David A.

Paul, Robert

Eliceiri, Brian

<120> Method of Treatment of Myocardial
Infarction

<130> TSRI-651.7

<150> PCT/US03/37653

<151> 2003-11-18

<150> 10/298,377

<151> 2002-11-18

<150> 09/538,248

<151> 2000-03-29

<150> 09/470,881

<151> 1999-12-22

<150> PCT/US99/11780

<151> 1999-05-28

<150> 60/087,220

<151> 1998-05-29

<160> 4

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 2187

<212> DNA

<213> homo sapiens

<220>

<221> CDS

<222> (134)...(1486)

<400> 1

```

gcgccgcgtc ccgcaggccg tgatgccgcc cgcgcgagg tggcccggac cgcagtgtccc 60
caagagagct ctaatggtac caagtgcacag gttggcttta ctgtgactcg gggacgccag 120
agctcctgag aag atg tca gca ata cag gcc gcc tgg cca tcc ggt aca 169
          Met Ser Ala Ile Gln Ala Ala Trp Pro Ser Gly Thr
                1             5             10

```

```

gaa tgt att gcc aag tac aac ttc cac ggc act gcc gag cag gac ctg 217
Glu Cys Ile Ala Lys Tyr Asn Phe His Gly Thr Ala Glu Gln Asp Leu

```

| 15 | 20 | 25 | |
|---|-----|-----|-----|
| ccc ttc tgc aaa gga gac gtg ctc acc att gtg gcc gtc acc aag gac | | | 265 |
| Pro Phe Cys Lys Gly Asp Val Leu Thr Ile Val Ala Val Thr Lys Asp | | | |
| 30 | 35 | 40 | |
| ccc aac tgg tac aaa gcc aaa aac aag gtg ggc cgt gag ggc atc atc | | | 313 |
| Pro Asn Trp Tyr Lys Ala Lys Asn Lys Val Gly Arg Glu Gly Ile Ile | | | |
| 45 | 50 | 55 | 60 |
| cca gcc aac tac gtc cag aag cgg gag ggc gtg aag gcg ggt acc aaa | | | 361 |
| Pro Ala Asn Tyr Val Gln Lys Arg Glu Gly Val Lys Ala Gly Thr Lys | | | |
| 65 | 70 | 75 | |
| ctc agc ctc atg cct tgg ttc cac ggc aag atc aca cgg gag cag gct | | | 409 |
| Leu Ser Leu Met Pro Trp Phe His Gly Lys Ile Thr Arg Glu Gln Ala | | | |
| 80 | 85 | 90 | |
| gag cgg ctt ctg tac ccg ccg gag aca ggc ctg ttc ctg gtg cgg gag | | | 457 |
| Glu Arg Leu Leu Tyr Pro Pro Glu Thr Gly Leu Phe Leu Val Arg Glu | | | |
| 95 | 100 | 105 | |
| agc acc aac tac ccc gga gac tac acg ctg tgc gtg agc tgc gac ggc | | | 505 |
| Ser Thr Asn Tyr Pro Gly Asp Tyr Thr Leu Cys Val Ser Cys Asp Gly | | | |
| 110 | 115 | 120 | |
| aag gtg gag cac tac cgc atc atg tac cat gcc agc aag ctc agc atc | | | 553 |
| Lys Val Glu His Tyr Arg Ile Met Tyr His Ala Ser Lys Leu Ser Ile | | | |
| 125 | 130 | 135 | 140 |
| gac gag gag gtg tac ttt gag aac ctc atg cag ctg gtg gag cac tac | | | 601 |
| Asp Glu Glu Val Tyr Phe Glu Asn Leu Met Gln Leu Val Glu His Tyr | | | |
| 145 | 150 | 155 | |
| acc tca gac gca gat gga ctc tgt acg cgc ctc att aaa cca aag gtc | | | 649 |
| Thr Ser Asp Ala Asp Gly Leu Cys Thr Arg Leu Ile Lys Pro Lys Val | | | |
| 160 | 165 | 170 | |
| atg gag ggc aca gtg gcg gcc cag gat gag ttc tac cgc agc ggc tgg | | | 697 |
| Met Glu Gly Thr Val Ala Ala Gln Asp Glu Phe Tyr Arg Ser Gly Trp | | | |
| 175 | 180 | 185 | |
| gcc ctg aac atg aag gag ctg aag ctg ctg cag acc atc ggg aag ggg | | | 745 |
| Ala Leu Asn Met Lys Glu Leu Lys Leu Leu Gln Thr Ile Gly Lys Gly | | | |
| 190 | 195 | 200 | |
| gag ttc gga gac gtg atg ctg ggc gat tac cga ggg aac aaa gtc gcc | | | 793 |
| Glu Phe Gly Asp Val Met Leu Gly Asp Tyr Arg Gly Asn Lys Val Ala | | | |
| 205 | 210 | 215 | 220 |
| gtc aag tgc att aag aac gac gcc act gcc cag gcc ttc ctg gct gaa | | | 841 |
| Val Lys Cys Ile Lys Asn Asp Ala Thr Ala Gln Ala Phe Leu Ala Glu | | | |
| 225 | 230 | 235 | |

| | |
|---|------|
| gcc tca gtc atg acg caa ctg cgg cat agc aac ctg gtg cag ctc ctg | 889 |
| Ala Ser Val Met Thr Gln Leu Arg His Ser Asn Leu Val Gln Leu Leu | |
| 240 245 250 | |
| ggc gtg atc gtg gag gag aag ggc ggg ctc tac atc gtc act gag tac | 937 |
| Gly Val Ile Val Glu Glu Lys Gly Gly Leu Tyr Ile Val Thr Glu Tyr | |
| 255 260 265 | |
| atg gcc aag ggg agc ctt gtg gac tac ctg cgg tct agg ggt cgg tca | 985 |
| Met Ala Lys Gly Ser Leu Val Asp Tyr Leu Arg Ser Arg Gly Arg Ser | |
| 270 275 280 | |
| gtg ctg ggc gga gac tgt ctc ctc aag ttc tcg cta gat gtc tgc gag | 1033 |
| Val Leu Gly Gly Asp Cys Leu Leu Lys Phe Ser Leu Asp Val Cys Glu | |
| 285 290 295 300 | |
| gcc atg gaa tac ctg gag ggc aac aat ttc gtg cat cga gac ctg gct | 1081 |
| Ala Met Glu Tyr Leu Glu Gly Asn Asn Phe Val His Arg Asp Leu Ala | |
| 305 310 315 | |
| gcc cgc aat gtg ctg gtg tct gag gac aac gtg gcc aag gtc agc gac | 1129 |
| Ala Arg Asn Val Leu Val Ser Glu Asp Asn Val Ala Lys Val Ser Asp | |
| 320 325 330 | |
| ttt ggt ctc acc aag gag gcg tcc agc acc cag gac acg ggc aag ctg | 1177 |
| Phe Gly Leu Thr Lys Glu Ala Ser Ser Thr Gln Asp Thr Gly Lys Leu | |
| 335 340 345 | |
| cca gtc aag tgg aca gcc cct gag gcc ctg aga gag aag aaa ttc tcc | 1225 |
| Pro Val Lys Trp Thr Ala Pro Glu Ala Leu Arg Glu Lys Lys Phe Ser | |
| 350 355 360 | |
| act aag tct gac gtg tgg agt ttc gga atc ctt ctc tgg gaa atc tac | 1273 |
| Thr Lys Ser Asp Val Trp Ser Phe Gly Ile Leu Leu Trp Glu Ile Tyr | |
| 365 370 375 380 | |
| tcc ttt ggg cga gtg cct tat cca aga att ccc ctg aag gac gtc gtc | 1321 |
| Ser Phe Gly Arg Val Pro Tyr Pro Arg Ile Pro Leu Lys Asp Val Val | |
| 385 390 395 | |
| cct cgg gtg gag aag ggc tac aag atg gat gcc ccc gac ggc tgc ccg | 1369 |
| Pro Arg Val Glu Lys Gly Tyr Lys Met Asp Ala Pro Asp Gly Cys Pro | |
| 400 405 410 | |
| ccc gca gtc tat gaa gtc atg aag aac tgc tgg cac ctg gac gcc gcc | 1417 |
| Pro Ala Val Tyr Glu Val Met Lys Asn Cys Trp His Leu Asp Ala Ala | |
| 415 420 425 | |
| atg cgg ccc tcc ttc cta cag ctc cga gag cag ctt gag cac atc aaa | 1465 |
| Met Arg Pro Ser Phe Leu Gln Leu Arg Glu Gln Leu Glu His Ile Lys | |
| 430 435 440 | |

acc cac gag ctg cac ctg tga cggtctggcct ccgcctgggt catgggcctg 1516
Thr His Glu Leu His Leu *
445 450

tggggactga acctggaaga tcatggacct ggtgcccctg ctcactgggc ccgagcctga 1576
actgagcccc agcgggctgg cgggcctttt tcctgcgtcc cagcctgcac ccctccggcc 1636
ccgtctctct tggacccacc tgtggggcct ggggagccca ctgagggggc agggaggaag 1696
gaggccacgg agcgggaggc agcgcgccac cacgtcgggc ttccctggcc tcccgccact 1756
cgcttcttta gagttttatt cctttccttt tttgagattt tttttccgtg tgtttatttt 1816
ttattatttt tcaagataag gagaaagaaa gtaccagca aatgggcatt ttacaagaag 1876
tacgaatctt atttttcctg tcctgcccgt gaggtggggg gggaccgggc ccctctctag 1936
ggaccctcg ccccgacctc attccccatt ctgtgtccca tgtcccgtgt ctccctcggtc 1996
gccccgtgtt tgcgcttgac catgttgac tgtttgcatg cgcgcgaggc agacgtctgt 2056
caggggcttg gatttcgtgt gccgctgccca cccgccacc cgcttgtga gatggaattg 2116
taataaacca cgccatgagg acaccgccgc ccgcctcggc gcttcctcca ccgaaaaaaaa 2176
aaaaaaaaa a 2187

<210> 2

<211> 450

<212> PRT

<213> homo sapiens

<400> 2

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ser | Ala | Ile | Gln | Ala | Ala | Trp | Pro | Ser | Gly | Thr | Glu | Cys | Ile | Ala |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Lys | Tyr | Asn | Phe | His | Gly | Thr | Ala | Glu | Gln | Asp | Leu | Pro | Phe | Cys | Lys |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Gly | Asp | Val | Leu | Thr | Ile | Val | Ala | Val | Thr | Lys | Asp | Pro | Asn | Trp | Tyr |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Lys | Ala | Lys | Asn | Lys | Val | Gly | Arg | Glu | Gly | Ile | Ile | Pro | Ala | Asn | Tyr |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Val | Gln | Lys | Arg | Glu | Gly | Val | Lys | Ala | Gly | Thr | Lys | Leu | Ser | Leu | Met |
| 65 | | | | 70 | | | | | 75 | | | | | 80 | |
| Pro | Trp | Phe | His | Gly | Lys | Ile | Thr | Arg | Glu | Gln | Ala | Glu | Arg | Leu | Leu |
| | | | 85 | | | | | 90 | | | | | | 95 | |
| Tyr | Pro | Pro | Glu | Thr | Gly | Leu | Phe | Leu | Val | Arg | Glu | Ser | Thr | Asn | Tyr |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Pro | Gly | Asp | Tyr | Thr | Leu | Cys | Val | Ser | Cys | Asp | Gly | Lys | Val | Glu | His |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Tyr | Arg | Ile | Met | Tyr | His | Ala | Ser | Lys | Leu | Ser | Ile | Asp | Glu | Glu | Val |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Tyr | Phe | Glu | Asn | Leu | Met | Gln | Leu | Val | Glu | His | Tyr | Thr | Ser | Asp | Ala |
| 145 | | | | 150 | | | | | 155 | | | | | 160 | |
| Asp | Gly | Leu | Cys | Thr | Arg | Leu | Ile | Lys | Pro | Lys | Val | Met | Glu | Gly | Thr |
| | | | 165 | | | | | 170 | | | | | | 175 | |
| Val | Ala | Ala | Gln | Asp | Glu | Phe | Tyr | Arg | Ser | Gly | Trp | Ala | Leu | Asn | Met |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Lys | Glu | Leu | Lys | Leu | Leu | Gln | Thr | Ile | Gly | Lys | Gly | Glu | Phe | Gly | Asp |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Val | Met | Leu | Gly | Asp | Tyr | Arg | Gly | Asn | Lys | Val | Ala | Val | Lys | Cys | Ile |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Lys | Asn | Asp | Ala | Thr | Ala | Gln | Ala | Phe | Leu | Ala | Glu | Ala | Ser | Val | Met |
| 225 | | | | | 230 | | | | | 235 | | | | 240 | |

Thr Gln Leu Arg His Ser Asn Leu Val Gln Leu Leu Gly Val Ile Val
 245 250 255
 Glu Glu Lys Gly Gly Leu Tyr Ile Val Thr Glu Tyr Met Ala Lys Gly
 260 265 270
 Ser Leu Val Asp Tyr Leu Arg Ser Arg Gly Arg Ser Val Leu Gly Gly
 275 280 285
 Asp Cys Leu Leu Lys Phe Ser Leu Asp Val Cys Glu Ala Met Glu Tyr
 290 295 300
 Leu Glu Gly Asn Asn Phe Val His Arg Asp Leu Ala Ala Arg Asn Val
 305 310 315 320
 Leu Val Ser Glu Asp Asn Val Ala Lys Val Ser Asp Phe Gly Leu Thr
 325 330 335
 Lys Glu Ala Ser Ser Thr Gln Asp Thr Gly Lys Leu Pro Val Lys Trp
 340 345 350
 Thr Ala Pro Glu Ala Leu Arg Glu Lys Lys Phe Ser Thr Lys Ser Asp
 355 360 365
 Val Trp Ser Phe Gly Ile Leu Leu Trp Glu Ile Tyr Ser Phe Gly Arg
 370 375 380
 Val Pro Tyr Pro Arg Ile Pro Leu Lys Asp Val Val Pro Arg Val Glu
 385 390 395 400
 Lys Gly Tyr Lys Met Asp Ala Pro Asp Gly Cys Pro Pro Ala Val Tyr
 405 410 415
 Glu Val Met Lys Asn Cys Trp His Leu Asp Ala Ala Met Arg Pro Ser
 420 425 430
 Phe Leu Gln Leu Arg Glu Gln Leu Glu His Ile Lys Thr His Glu Leu
 435 440 445
 His Leu
 450

<210> 3
 <211> 4517
 <212> DNA
 <213> homo sapiens

<220>
 <221> CDS
 <222> (208)...(1839)

<400> 3
 gcggagccaa ggcacacggg tctgaccctt gggccggccc ggagcaagtg acacggaccg 60
 gtcgcctatc ctgaccacag caaagcggcc cggagcccgc ggaggggacc tgacgggggc 120
 gtaggcgccg gaaggctggg ggccccggag ccggggccggc gtggcccagag ttccggtgag 180
 cggacggcgg cgcgcgcaga tttgata atg ggc tgc att aaa agt aaa gaa aac 234
 Met Gly Cys Ile Lys Ser Lys Glu Asn
 1 5

aaa agt cca gcc att aaa tac aga cct gaa aat act cca gag cct gtc 282
 Lys Ser Pro Ala Ile Lys Tyr Arg Pro Glu Asn Thr Pro Glu Pro Val
 10 15 20 25

agt aca agt gtg agc cat tat gga gca gaa ccc act aca gtg tca cca 330
 Ser Thr Ser Val Ser His Tyr Gly Ala Glu Pro Thr Thr Val Ser Pro

| | 30 | 35 | 40 | |
|---|-----|-----|-----|-----|
| tgt ccg tca tct tca gca aag gga aca gca gtt aat ttc agc agt ctt | | | | 378 |
| Cys Pro Ser Ser Ser Ala Lys Gly Thr Ala Val Asn Phe Ser Ser Leu | | | | |
| | 45 | 50 | 55 | |
| tcc atg aca cca ttt gga gga tcc tca ggg gta acg cct ttt gga ggt | | | | 426 |
| Ser Met Thr Pro Phe Gly Gly Ser Ser Gly Val Thr Pro Phe Gly Gly | | | | |
| | 60 | 65 | 70 | |
| gca tct tcc tca ttt tca gtg gtg cca agt tca tat cct gct ggt tta | | | | 474 |
| Ala Ser Ser Ser Phe Ser Val Val Pro Ser Ser Tyr Pro Ala Gly Leu | | | | |
| | 75 | 80 | 85 | |
| aca ggt ggt gtt act ata ttt gtg gcc tta tat gat tat gaa gct aga | | | | 522 |
| Thr Gly Gly Val Thr Ile Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg | | | | |
| | 90 | 95 | 100 | 105 |
| act aca gaa gac ctt tca ttt aag aag ggt gaa aga ttt caa ata att | | | | 570 |
| Thr Thr Glu Asp Leu Ser Phe Lys Lys Gly Glu Arg Phe Gln Ile Ile | | | | |
| | 110 | 115 | 120 | |
| aac aat acg gaa gga gat tgg tgg gaa gca aga tca atc gct aca gga | | | | 618 |
| Asn Asn Thr Glu Gly Asp Trp Trp Glu Ala Arg Ser Ile Ala Thr Gly | | | | |
| | 125 | 130 | 135 | |
| aag aat ggt tat atc ccg agc aat tat gta gcg cct gca gat tcc att | | | | 666 |
| Lys Asn Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Ala Asp Ser Ile | | | | |
| | 140 | 145 | 150 | |
| cag gca gaa gaa tgg tat ttt ggc aaa atg ggg aga aaa gat gct gaa | | | | 714 |
| Gln Ala Glu Glu Trp Tyr Phe Gly Lys Met Gly Arg Lys Asp Ala Glu | | | | |
| | 155 | 160 | 165 | |
| aga tta ctt ttg aat cct gga aat caa cga ggt att ttc tta gta aga | | | | 762 |
| Arg Leu Leu Leu Asn Pro Gly Asn Gln Arg Gly Ile Phe Leu Val Arg | | | | |
| | 170 | 175 | 180 | 185 |
| gag agt gaa aca act aaa ggt gct tat tcc ctt tct att cgt gat tgg | | | | 810 |
| Glu Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp | | | | |
| | 190 | 195 | 200 | |
| gat gag ata agg ggt gac aat gtg aaa cac tac aaa att agg aaa ctt | | | | 858 |
| Asp Glu Ile Arg Gly Asp Asn Val Lys His Tyr Lys Ile Arg Lys Leu | | | | |
| | 205 | 210 | 215 | |
| gac aat ggt gga tac tat atc aca acc aga gca caa ttt gat act ctg | | | | 906 |
| Asp Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Asp Thr Leu | | | | |
| | 220 | 225 | 230 | |
| cag aaa ttg gtg aaa cac tac aca gaa cat gct gat ggt tta tgc cac | | | | 954 |
| Gln Lys Leu Val Lys His Tyr Thr Glu His Ala Asp Gly Leu Cys His | | | | |
| | 235 | 240 | 245 | |

| | |
|---|------|
| aag ttg aca act gtg tgt cca act gtg aaa cct cag act caa ggt cta | 1002 |
| Lys Leu Thr Thr Val Cys Pro Thr Val Lys Pro Gln Thr Gln Gly Leu | |
| 250 255 260 265 | |
| gca aaa gat gct tgg gaa atc cct cga gaa tct ttg cga cta gag gtt | 1050 |
| Ala Lys Asp Ala Trp Glu Ile Pro Arg Glu Ser Leu Arg Leu Glu Val | |
| 270 275 280 | |
| aaa cta gga caa gga tgt ttc ggc gaa gtg tgg atg gga aca tgg aat | 1098 |
| Lys Leu Gly Gln Gly Cys Phe Gly Glu Val Trp Met Gly Thr Trp Asn | |
| 285 290 295 | |
| gga acc acg aaa gta gca atc aaa aca cta aaa cca ggt aca atg atg | 1146 |
| Gly Thr Thr Lys Val Ala Ile Lys Thr Leu Lys Pro Gly Thr Met Met | |
| 300 305 310 | |
| cca gaa gct ttc ctt caa gaa gct cag ata atg aaa aaa tta aga cat | 1194 |
| Pro Glu Ala Phe Leu Gln Glu Ala Gln Ile Met Lys Lys Leu Arg His | |
| 315 320 325 | |
| gat aaa ctt gtt cca cta tat gct gtt gtt tct gaa gaa cca att tac | 1242 |
| Asp Lys Leu Val Pro Leu Tyr Ala Val Val Ser Glu Glu Pro Ile Tyr | |
| 330 335 340 345 | |
| att gtc act gaa ttt atg tca aaa gga agc tta tta gat ttc ctt aag | 1290 |
| Ile Val Thr Glu Phe Met Ser Lys Gly Ser Leu Leu Asp Phe Leu Lys | |
| 350 355 360 | |
| gaa gga gat gga aag tat ttg aag ctt cca cag ctg gtt gat atg gct | 1338 |
| Glu Gly Asp Gly Lys Tyr Leu Lys Leu Pro Gln Leu Val Asp Met Ala | |
| 365 370 375 | |
| gct cag att gct gat ggt atg gca tat att gaa aga atg aac tat att | 1386 |
| Ala Gln Ile Ala Asp Gly Met Ala Tyr Ile Glu Arg Met Asn Tyr Ile | |
| 380 385 390 | |
| cac cga gat ctt cgg gct gct aat att ctt gta gga gaa aat ctt gtg | 1434 |
| His Arg Asp Leu Arg Ala Ala Asn Ile Leu Val Gly Glu Asn Leu Val | |
| 395 400 405 | |
| tgc aaa ata gca gac ttt ggt tta gca agg tta att gaa gac aat gaa | 1482 |
| Cys Lys Ile Ala Asp Phe Gly Leu Ala Arg Leu Ile Glu Asp Asn Glu | |
| 410 415 420 425 | |
| tac aca gca aga caa ggt gca aaa ttt cca atc aaa tgg aca gct cct | 1530 |
| Tyr Thr Ala Arg Gln Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro | |
| 430 435 440 | |
| gaa gct gca ctg tat ggt cgg ttt aca ata aag tct gat gtc tgg tca | 1578 |
| Glu Ala Ala Leu Tyr Gly Arg Phe Thr Ile Lys Ser Asp Val Trp Ser | |
| 445 450 455 | |

ttt gga att ctg caa aca gaa cta gta aca aag ggc cga gtg cca tat 1626
Phe Gly Ile Leu Gln Thr Glu Leu Val Thr Lys Gly Arg Val Pro Tyr
460 465 470

cca ggt atg gtg aac cgt gaa gta cta gaa caa gtg gag cga gga tac 1674
Pro Gly Met Val Asn Arg Glu Val Leu Glu Gln Val Glu Arg Gly Tyr
475 480 485

agg atg ccg tgc cct cag ggc tgt cca gaa tcc ctc cat gaa ttg atg 1722
Arg Met Pro Cys Pro Gln Gly Cys Pro Glu Ser Leu His Glu Leu Met
490 495 500 505

aat ctg tgt tgg aag aag gac cct gat gaa aga cca aca ttt gaa tat 1770
Asn Leu Cys Trp Lys Lys Asp Pro Asp Glu Arg Pro Thr Phe Glu Tyr
510 515 520

att cag tcc ttc ttg gaa gac tac ttc act gct aca gag cca cag tac 1818
Ile Gln Ser Phe Leu Glu Asp Tyr Phe Thr Ala Thr Glu Pro Gln Tyr
525 530 535

cag cca gga gaa aat tta taa ttcaagtagc ctatttttata tgcacaaatc 1869
Gln Pro Gly Glu Asn Leu *
540

tgccaaaata taaagaactt gtgtagattt tctacaggaa tcaaaagaag aaaatcttct 1929
ttactctgca tgtttttaat ggtaaactgg aatcccagat atgggtgcac aaaaccactt 1989
ttttttcccc aagtattaaa ctctaattgta ccaatgatga atttatcagc gtatttcagg 2049
gtccaaacaa aatagagcta agatactgat gacagtgtgg gtgacagcat ggtaatgaag 2109
gacagtggag ctctgtctta ttataaaatc atttcctttc tttttttccc caaagtcaga 2169
attgctcaaa gaaaattatt tattgttaca gataaaactt gagagataaa aagctataacc 2229
ataataaaat ctaaaattaa ggaatatcat gggaccaa atattccattc cagtttttta 2289
aagtttcttg catttattat tctcaaaagt tttttctaag ttaaacagtc agtatgcaat 2349
cttaatatat gctttctttt gcatggacat gggccagggt tttcaaaagg aatataaaca 2409
ggatctcaaa ctgattataa tgtagacca cagaagtggg atttgaaagt ataatgcagt 2469
acattaatat tcatgttcat ggaactgaaa gaataagaac tttttcactt cagtcttttt 2529
ctgaagagtt tgacttagaa taatgaagggt aactagaaag tgagttaatc ttgtatgagg 2589
ttgcattgat tttttaaggc aatatataat tgaaactact gtccaatcaa aggggaaatg 2649
ttttgatctt tagatagcat gcaaagtaag acccagcatt ttaaaagccc ttttttaaaa 2709
actagacttc gtactgtgag tattgcttat atgtccttat ggggatgggt gccacaaata 2769
gaaaatatga ccagatcagg gacttgaatg cacttttgct catggtgaat atagatgaac 2829
agagaggaaa atgtatttaa agaaaatacg agaaaagaaa atgtgaaagt tttacaagtt 2889
agagggatgg aaggtaatgt ttaatgttga tgtcatggag tgacagaatg gctttgctgg 2949
cactcagagc tctcacttta gctatatctt gagactttga agagttataa agtataacta 3009
taaaactaat ttttcttaca cactaaatgg gtatttgttc aaaataatga agttatggct 3069
tcacattcat tgcagtggga tatggttttt atgtaaaaca tttttagaac tccagttttc 3129
aaatcatgtt tgaatctaca ttcacttttt tttgttttct tttttgagac ggagtctcgc 3189
tctgccgccc aggctggagt gcagtggcgc gatctcggct cactgcaagc tctgcctccc 3249
aggttcacac cattctcctg cctcagcctc ccgagtagct gggactacag gtgcccacca 3309
ccacgcctgg ctagtttttt gtatttttag tagagacgca gtttcaccgt gttagccagg 3369
atggtctcga tctcctgacc ttgtgatctg cccgcctcgg cctcccaaag tgctgggatt 3429
acaggtgtga gccaccgcgc ccagcctaca ttcacttcta aagtctatgt aatggtgggtc 3489
attttttccc ttttagaata cattaaatgg ttgatttggg gaggaaaact tattctgaat 3549
attaacggtg gtgaaaaggg gacagttttt accctaaagt gcaaaagtga aacatacaaa 3609

ataagactaa tttttaagag taactcagta atttcaaaat acagatttga atagcagcat 3669
tagtgggtttg agtgtctagc aaaggaaaaa ttgatgaata aaatgaaggc ctggtgtata 3729
tgtttttaaaa tactctcata tagtcacact ttaaattaag ccttatatta ggccctccta 3789
ttttcaggat ataattctta actatcatta tttacctgat tttaatcatc agattcgaaa 3849
ttctgtgccca tggcgtatat gttcaaattc aaaccatttt taaaatgtga agatggactt 3909
catgcaagtt ggcagtgggt ctggtactaa aaattgtggg tgttttttct gtttacgtaa 3969
cctgcttagt attgacactc tctaccaaga gggcttctct aagaagagtg ctgtcattat 4029
ttcctcttat caacaacttg tgacatgaga ttttttaagg gctttatgtg aactatgata 4089
ttgtaatttt tctaagcata ttcaaaaggg tgacaaaatt acgtttatgt actaaatcta 4149
atcaggaaaag taaggcagga aaagttgatg gtattcatta ggttttaact gaatggagca 4209
gttccttata taataacaat tgtatagtag ggataaaaaca ctaacaatgt gtattcattt 4269
taaatgtgtc tgtatttttta aattgccaaag aaaaacaact ttgtaaattt ggagatatatt 4329
tccaacagct tttcgtcttc agtgtcttaa tgtggaagtt aacccttacc aaaaaaggaa 4389
gttggcaaaa acagccttct agcacacttt tttaaatgaa taatggtagc ctaaaccttaa 4449
tatttttata aagtattgta atattgtttt gtggataatt gaaataaaaa gttctcattg 4509
aatgcacc 4517

<210> 4

<211> 543

<212> PRT

<213> homo sapiens

<400> 4

Met Gly Cys Ile Lys Ser Lys Glu Asn Lys Ser Pro Ala Ile Lys Tyr
1 5 10 15
Arg Pro Glu Asn Thr Pro Glu Pro Val Ser Thr Ser Val Ser His Tyr
20 25 30
Gly Ala Glu Pro Thr Thr Val Ser Pro Cys Pro Ser Ser Ser Ala Lys
35 40 45
Gly Thr Ala Val Asn Phe Ser Ser Leu Ser Met Thr Pro Phe Gly Gly
50 55 60
Ser Ser Gly Val Thr Pro Phe Gly Gly Ala Ser Ser Ser Phe Ser Val
65 70 75 80
Val Pro Ser Ser Tyr Pro Ala Gly Leu Thr Gly Gly Val Thr Ile Phe
85 90 95
Val Ala Leu Tyr Asp Tyr Glu Ala Arg Thr Thr Glu Asp Leu Ser Phe
100 105 110
Lys Lys Gly Glu Arg Phe Gln Ile Ile Asn Asn Thr Glu Gly Asp Trp
115 120 125
Trp Glu Ala Arg Ser Ile Ala Thr Gly Lys Asn Gly Tyr Ile Pro Ser
130 135 140
Asn Tyr Val Ala Pro Ala Asp Ser Ile Gln Ala Glu Glu Trp Tyr Phe
145 150 155 160
Gly Lys Met Gly Arg Lys Asp Ala Glu Arg Leu Leu Leu Asn Pro Gly
165 170 175
Asn Gln Arg Gly Ile Phe Leu Val Arg Glu Ser Glu Thr Thr Lys Gly
180 185 190
Ala Tyr Ser Leu Ser Ile Arg Asp Trp Asp Glu Ile Arg Gly Asp Asn
195 200 205
Val Lys His Tyr Lys Ile Arg Lys Leu Asp Asn Gly Gly Tyr Tyr Ile
210 215 220
Thr Thr Arg Ala Gln Phe Asp Thr Leu Gln Lys Leu Val Lys His Tyr
225 230 235 240

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Glu | His | Ala | Asp | Gly | Leu | Cys | His | Lys | Leu | Thr | Thr | Val | Cys | Pro |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Thr | Val | Lys | Pro | Gln | Thr | Gln | Gly | Leu | Ala | Lys | Asp | Ala | Trp | Glu | Ile |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Pro | Arg | Glu | Ser | Leu | Arg | Leu | Glu | Val | Lys | Leu | Gly | Gln | Gly | Cys | Phe |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Gly | Glu | Val | Trp | Met | Gly | Thr | Trp | Asn | Gly | Thr | Thr | Lys | Val | Ala | Ile |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Lys | Thr | Leu | Lys | Pro | Gly | Thr | Met | Met | Pro | Glu | Ala | Phe | Leu | Gln | Glu |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Ala | Gln | Ile | Met | Lys | Lys | Leu | Arg | His | Asp | Lys | Leu | Val | Pro | Leu | Tyr |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Ala | Val | Val | Ser | Glu | Glu | Pro | Ile | Tyr | Ile | Val | Thr | Glu | Phe | Met | Ser |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Lys | Gly | Ser | Leu | Leu | Asp | Phe | Leu | Lys | Glu | Gly | Asp | Gly | Lys | Tyr | Leu |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Lys | Leu | Pro | Gln | Leu | Val | Asp | Met | Ala | Ala | Gln | Ile | Ala | Asp | Gly | Met |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Ala | Tyr | Ile | Glu | Arg | Met | Asn | Tyr | Ile | His | Arg | Asp | Leu | Arg | Ala | Ala |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Asn | Ile | Leu | Val | Gly | Glu | Asn | Leu | Val | Cys | Lys | Ile | Ala | Asp | Phe | Gly |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Leu | Ala | Arg | Leu | Ile | Glu | Asp | Asn | Glu | Tyr | Thr | Ala | Arg | Gln | Gly | Ala |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Lys | Phe | Pro | Ile | Lys | Trp | Thr | Ala | Pro | Glu | Ala | Ala | Leu | Tyr | Gly | Arg |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Phe | Thr | Ile | Lys | Ser | Asp | Val | Trp | Ser | Phe | Gly | Ile | Leu | Gln | Thr | Glu |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Leu | Val | Thr | Lys | Gly | Arg | Val | Pro | Tyr | Pro | Gly | Met | Val | Asn | Arg | Glu |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Val | Leu | Glu | Gln | Val | Glu | Arg | Gly | Tyr | Arg | Met | Pro | Cys | Pro | Gln | Gly |
| | | | 485 | | | | | | 490 | | | | | 495 | |
| Cys | Pro | Glu | Ser | Leu | His | Glu | Leu | Met | Asn | Leu | Cys | Trp | Lys | Lys | Asp |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Pro | Asp | Glu | Arg | Pro | Thr | Phe | Glu | Tyr | Ile | Gln | Ser | Phe | Leu | Glu | Asp |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Tyr | Phe | Thr | Ala | Thr | Glu | Pro | Gln | Tyr | Gln | Pro | Gly | Glu | Asn | Leu | |
| | 530 | | | | | 535 | | | | | 540 | | | | |